energized

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Message to Energy Managers

The fifth annual Federal energy conference, Energy 2002, brought together energy managers from all over the world. Several DON energy managers shared their energy conservation expertise with the thousand-plus attendees. They covered topics such as project financing, sustainable design, and distributed energy resources.

NSWC Crane is host to the world's first Proton Exchange Membrane power plant. In addition to producing lower CO_2 emissions, this new technology has the potential to decentralize power generation on ships and land.

Naval Station Everett, Washington initiated an energy conservation retrofit program that has saved them nearly $145,000 annually, and energy savings of nearly 10,000 MBtus.

And the Federal Energy Management Program (FEMP) has honored as Federal Energy Showcases, two DON projects: Naval Air Station, North Island, California for its photovoltaic-covered parking; and MCAS Beaufort, South Carolina for its GeoExchange residential heating and cooling systems. Congratulations!

Navy Stars at Energy 2002

In June, the road to energy savings led Navy and other Federal energy managers to 115-degree Palm Springs, California. They came for Energy 2002, the fifth annual Federal energy conservation conference and Expo.

The conference, sponsored by the Department of Energy's Office of Federal Energy Management Programs with help from the Department of Defense and General Services Administration, was once again bolstered by DON energy managers who provided expert advice and perspective to the

thousand-plus attendees. The DON Energy Policy Board also met following the conference.

Energy 2002 is one of the most important energy conservation events of the year. The idea is to bring together the government's brightest and most successful energy managers and other leaders to create a showcase for hot ideas, cutting-edge technology, strategies, and applications.

DON experts provided expertise in 11 of the 70 conference presentations on subjects ranging from project financing to sustainable design to distributed energy resources.

For example, as part of the conferences' opening day program, the head of the Geothermal Program Office at NAWS China Lake addressed a session on geothermal energy, describing how that technology can help Federal entities meet renewables goals. A Navy official with the Deputy Undersecretary of Defense (I&E) addressed a session on utility privatization. His message: that in spite of stumbling blocks, Navy will make much progress in the next 12 months, bringing more reliable and efficient energy; technological innovation, best practices and finances; and lower energy costs. At the same time, the Director of Engineering and Technology for the Naval Facilities Engineering Command helped lead a session

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DON Energy Awareness Website: Access the tools on the Navy Energy website for ideas, planning tips, and tools. Set your browser to <**http://energy.navy.mil**> and scroll down the left-hand column to the Awareness pick.

Fleet Managers Note:

Honda Hybrid is a Winner

The American Council for an Energy-Efficient Economy (ACEEE), publisher of the *Green Book*™, gives the new 2003 Honda Civic Hybrid outstanding marks in its *Environment Guide to Cars and Trucks.* ACEEE's rating system accounts for both health-threatening tailpipe pollution and global warming emissions.

ACEEE has also added the Civic Hybrid to its model year 2003 ratings on GreenerCars.com, the online version of its comprehensive environmental guide to vehicles.

"By offering a hybrid trimline option on the popular Civic model, Honda has declared environmentally friendly hybrid technology fit for mass consumption," stated James Kliesch, *Green Book* co-author and Research Associate at ACEEE. The other hybrid-electric models currently on sale in the U.S. are Toyota's compact sedan Prius and Honda's two-seater Insight.

"What makes the Civic Hybrid extraordinary," said *Green Book* co-author John DiCicco, "is that fuel economy is increased by over 30% in what is already one of the most efficient vehicles on the market."

Achieving 46 miles-per-gallon (mpg) in the city and 51 mpg on the highway with the 5-speed manual transmission, the Civic Hybrid can travel more than 600 miles on a single tank of gas. The automatic transmission version achieves 48 mpg/city, 47/highway. "This efficiency boost, along with the Civic Hybrid's Ultra-Low-Emission Vehicle (ULEV) rating, makes it one of the top five greenest vehicles now on the market," stated Kliesch.

Navy Hosts Distributed Generation Tests

Southern Indiana may be best known for Indiana University basketball and the home of rock star John Mellencamp. But it is also where the Office of Naval Research (ONR) teamed with Cinergy Technology, Inc. (CTI), with support from Ballard Generation Systems (BGS) to conduct the world's first field trial program of a 250 kW class Proton Exchange Membrane (PEM) power plant.

The power plant test facility is at the Crane Division-Naval Surface Warfare Center (NSWC Crane), Crane, Indiana. It is a natural setting for the PEM technology program, since NSWC Crane is one of the Navy's leading electro-chemical applications research centers. It has an aggressive energy program and was most recently a 2001 SECNAV winner.

NSWC Crane with its staff of 1,896 scientists, engineers and technicians, handles, among other things, electrical and electronic equipment analyses, applications and research. NSWC Crane and CTI managed the PEM power plant program sponsored by the Logistics Program in the Office of Naval Research, Arlington, VA.

ONR and CTI co-funded the two-year $3.5 million field trial program through a Technology Investment Agreement (TIA) that assessed the technology for both civilian and military applications. They reviewed plant performance, reliability, efficiency, and power quality. Meanwhile, the School of Public and Environmental Affairs at Indiana University (IU) studied its environmental impacts.

At Crane, the unit went through systems balancing and software preparation. The power plant began operating in a grid parallel mode two weeks later and started serving NSWC Crane's battery research facility. During the pilot period, the plant generated more than one million kilowatt-hours and heated one building through its cogeneration capability.

Meanwhile, IU studied its emissions characteristics. When the fuel cell power plant emissions are compared to conventional generation technologies (both utility and marine applications), the fuel cell power plant is the cleaner of the technologies. Because of its high-

New PEM unit at NSWC Crane

er efficiency, the fuel cell power plant has lower CO_2 emissions per kilowatt-hour of operation than conventional forms of power generation (coal, oil and gas).

So what broader lessons came from the experience? The program will, engineers say, advance the spirit and intentions of Executive Order 13123, "Greening the Government through Efficient Energy Management." Moreover, the demonstration at NSWC Crane may be a critical step in the development of fuel cell technology, and the decentralization of power generation on ships and land. This program and others like it have the potential to expedite fuel cell technology commercialization, and make this technology more available for Navy applications.

This private-public partnership, they say, will successfully position PEM fuel cell power systems in military and civilian Distributed Generation (DG) applications to bring power generation closer to the end user and improve energy efficiency, quality, and reliability.

Another benefit, ONR says, is that domestic security can benefit from DG capability, since sabotage against such a network will affect only small areas. In this way, they say, the September 11 attack provided further incentive and urgency for developing the program.

NAVSTA Everett Lights Up

Naval Station (NAVSTA) Everett Washington, nestled into the Puget Sound coastline about 30 miles north of Seattle, has been ablaze with energy conservation retrofits. Energy managers there are well into an $820,000 project that will result in energy cost savings of nearly $143,000 annually, and yearly energy savings of nearly 10,000 MBtus.

NAVSTA Everett comprises nearly 40 buildings, supports about 6,000 active duty military personnel and employs approximately 1,000 civilian employees. The base also supports 62 tenants at two complexes, and seven homeported ships.

The retrofits were first identified through a coordinated effort between NAVSTA Everett and the Snohomish County Public Utility Division (PUD). Members from PUD worked with the Public Works Department to audit all facilities at the waterfront and Smokey Point complexes to identify potential cost/resource saving improvements.

The lighting portion of the project retrofits a large number of the Station's T-12 fluorescent lights to T-8s. It replaces a majority of the station's high bay metal halide fixtures with cutting-edge technology fluorescents. On average, a 400W metal halide will be replaced with a 200W, 2' x 2' 5 lamp T-5 fixture or an 8', 6 lamp T-5 fixture.

These fixtures feature an instant on/off capability—eliminating the warm-up time metal halides require—and allowing the usage of controls such as motion detectors. They also last longer, do not reduce output over their lifetime, and raise light levels as much as 30%.

The HVAC portion of the project includes installation of variable speed drives and CO_2 sensors. This equipment allows greater flexibility in serving the Station's buildings through a direct digital control system (DDC). Variable speed also means variable power use. On average this will lower the air handler unit draw by 30%. In addition, the project will re-commission the HVAC systems at several facilities and ensure features such as heat recovery are being used efficiently. All of this work builds on a separate upgrade program conducted last year.

Lighting retrofits reduce energy costs at NAVSTA Everett's gym

They also installed approximately 60 "Vending Misers" at the waterfront and Smokey Point complexes. Thanks to help from the PUD and a rebate program, Everett received the devices at no cost. Managers also partnered with the Bonneville Power Administration to get the same deal at Jim Creek Naval Radiostation—a site about 45 minutes north of the Smokey Point complex Everett recently absorbed.

Vending Miser employs a passive infrared sensor that powers down a vending machine (or a bank of machines) whenever the surrounding area is unoccupied. The result is significantly reduced power consumption. Thanks to that simple idea alone, Everett saves more than $8,000 and 375 MBtus per year.

FEMP Honors DON Activities

Two projects highlighted in *energized* have been honored as energy showcases by the Federal government. The Federal Energy Management Program (FEMP), a part of the Department of Energy (DOE), named Building 652, photovoltaic-covered parking at Naval Air Station, North Island (California); and the Laurel Bay and Pine Grove II housing at MCAS Beaufort (South Carolina) as Federal Energy Showcases.

You read about Building 652 at North Island here in the March 2002 issue of *energized* (http://energy.navy.mil/publications/energized/issue703.pdf). When it's finished it may be the largest covered parking PV installation in the world, consisting of twin parking structures topped by a 750 kW, 81,000 square foot solar-topped parking area serving long term deployed military personnel.

We wrote about the MCAS Beaufort project in the September 2001 issue of *energized* (http://energy.navy.mil/publications/energized/issue609.pdf), where the Marines were installing one of the Navy's most efficient ground-source, or Geo-Exchange, residential heating and cooling systems. The systems reduce energy consumption by 40% and will save at least $800,000 a year. Laurel Bay and Pine Grove II house more than 1,200 Marines and their families.

Congratulations to all of those whose vision and persistence has again paid off in a big way.

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on policy development and application of sustainable design and development.

The Assistant Chief of Civil Engineers and Director of Seabee Readiness, NAVFAC Headquarters delivered advice on formulating comprehensive energy conservation policies that work. A manager with Navy Public Works Center San Diego offered expertise in combined cooling, heat and power technologies. And the energy manager of Portsmouth (ME) Naval Shipyard delivered an educational session on how to measure and verify energy use.

Navy leaders also addressed international energy conservation concerns, innovation on water conservation, and trends for the future.

On the last evening of the conference, DON held an event for all Navy and Marine Corps conference attendees to visit with each other and representatives from NAVFACHQ, CNO, ASN(I&E), and MCHQ. Following an informal "meet & greet" reception, four panelists made brief presentations and took questions from the 70+ attendees on current issues.

Check It Out

Help! for Energy Managers

Upcoming meetings to help energy managers network, refine skills, and learn new ones …

Natural Gas Technologies—What's New and What's Next, 29 Sept. – 02 October, Orlando, FL. Annual conference and exhibition on new technologies available now. Sponsored by U.S. Department of Energy National Energy Technology Lab. Info: Bonnie Feingold, Gas Technology Institute: 847-768-0815.

World Energy Engineering Congress, 2002 Combined Heat and Power Expo, and Environmental Technology Expo, 9-11 October, Atlanta, GA. Latest in combined heat and power technologies and a place to reach industry leaders who can help make critical procurement decisions for energy efficient products. Sponsored by Association of Energy Engineers. Info: Ted Kurklis, 770-449-1595.

PowerSystems World, 29-31 October, Rosemont, IL. Conference for engineers, management, and system integrators focusing on electric power quality and reliability. Sponsored by Primedia Business Exhibitions. Info: Charlie Browne, 203-358-9900.

EMART Energy 2002, 30-31 October, Paris, France. Major symposium and exhibit, deals with strategic energy issues in purchase and transport of energy. Organized by Synergy. Info: +31 (0) 346 590901.

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Watts News?

We want to hear from you.

Tell us about the energy initiatives you're working on, the problems you encounter, and the solutions you discover.

Submit article ideas, comments, or questions to:
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